

# Porteous Fastener Company

## Product Information Sheet

### Hex Cap Screws, Inch Series, Grade 5



- PFC Product Categories: 00050, 00051, 00056, & 00057
- Typical Material: Medium Carbon Steel
- Material and Mechanical Properties: Purchased to meet SAE J429 Grade 5.
- Dimensions: ASME B18.2.1, Rolled Threads
  - Domestic 1 3/8 & 1 1/2 diameters are Hex Bolts.
- Zinc Plating: Purchased to meet ASTM F1941 FeZn3A
- Typical Hardness: HRC 25-34 on sizes 1/4 to 1 inch; HRC 19-30 on sizes over 1 to 1 1/2 inches.
- Tensile Strength: 120,000 PSI Minimum on sizes 1/4 to 1 inch; 105,000 PSI Minimum on sizes over 1 to 1 1/2 inches.

Tensile Strength - NC Threads		
Size	PSI	Pounds
1/4-20	120,000	3800
5/16-18	120,000	6300
3/8-16	120,000	9300
7/16-14	120,000	12,800
1/2-13	120,000	17,000
9/16-12	120,000	21,800
5/8-11	120,000	27,100
3/4-10	120,000	40,100
7/8-9	120,000	55,400
1-8	120,000	72,700
1 1/8-7	105,000	80,100
1 1/4-7	105,000	101,700
1 3/8-6	105,000	121,300
1 1/2-6	105,000	147,500

Tensile Strength - NF Threads		
Size	PSI	Pounds
1/4-28	120,000	4350
5/16-24	120,000	6950
3/8-24	120,000	10,500
7/16-20	120,000	14,200
1/2-20	120,000	19,200
9/16-18	120,000	24,400
5/8-18	120,000	30,700
3/4-16	120,000	44,800
7/8-14	120,000	61,100
1-12	120,000	79,600
1-14	120,000	81,500
1 1/8-12	105,000	89,900
1 1/4-12	105,000	112,700
1 3/8-12	105,000	138,100
1 1/2-12	105,000	166,000

## Hex Cap Screws, Inch Series, Grade 5

Cap Screw Grip Length												
Nominal Diameter	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4
Nominal length	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min	Max/Min
Up to 1 1/8"	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 1/4	0.50/0.25	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 3/8	0.63/0.38	0.50/0.22	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 1/2	0.75/0.50	0.62/0.35	0.50/0.19	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 5/8	0.88/0.62	0.75/0.47	0.62/0.31	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 3/4	1.00/0.75	0.88/0.60	0.75/0.44	0.63/0.27	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
1 7/8	1.12/0.88	1.00/0.72	0.88/0.56	0.75/0.39	0.63/0.24	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2	1.25/1.00	1.12/0.85	1.00/0.69	0.88/0.52	0.75/0.38	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 1/4	1.50/1.25	1.38/1.10	1.25/0.94	1.12/0.77	1.00/0.52	0.88/0.46	0.75/0.33	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 1/2	1.75/1.50	1.62/1.35	1.50/1.19	1.38/1.02	1.25/0.86	1.12/0.75	1.00/0.55	Full Thread	Full Thread	Full Thread	Full Thread	Full Thread
2 3/4	2.00/1.75	1.88/1.60	1.75/1.44	1.62/1.27	1.50/1.12	1.38/0.96	1.25/0.80	1.00/0.50	Full Thread	Full Thread	Full Thread	Full Thread
3	2.25/2.00	2.12/1.85	2.00/1.69	1.88/1.52	1.75/1.36	1.62/1.21	1.50/1.05	1.25/0.75	1.00/0.44	Full Thread	Full Thread	Full Thread
3 1/2	2.75/2.50	2.62/2.35	2.50/2.19	2.38/2.02	2.25/1.86	2.12/1.71	2.00/1.55	1.75/1.25	1.50/0.94	1.25/0.62	Full Thread	Full Thread
4	3.25/3.00	3.12/2.85	3.00/2.69	2.88/2.52	2.75/2.36	2.62/2.21	2.50/2.05	2.25/1.75	2.00/1.44	1.75/1.12	1.50/0.79	1.25/0.54
4 1/2	3.75/3.50	3.62/3.35	3.50/3.19	3.38/3.02	3.25/2.86	3.12/2.71	3.00/2.55	2.75/2.25	2.50/1.94	2.25/1.62	2.00/1.29	1.75/1.04
5	4.25/4.00	4.12/3.85	4.00/3.69	3.88/3.52	3.75/3.36	3.62/3.21	3.50/3.05	3.25/2.75	3.00/2.44	2.75/2.12	2.50/1.79	2.25/1.54
5 1/2	4.75/4.50	4.62/4.35	4.50/4.19	4.38/4.02	4.25/3.87	4.12/3.71	4.00/3.55	3.75/3.25	3.50/2.94	3.25/2.62	3.00/2.29	2.75/2.04
6	5.25/5.00	5.12/4.85	5.00/4.69	4.88/4.52	4.75/4.36	4.62/4.21	4.50/4.05	4.25/3.75	4.00/3.44	3.75/3.12	3.50/2.79	3.25/2.54
6 1/2	5.50/5.25	5.38/5.10	5.25/4.94	5.12/4.77	5.00/4.62	4.88/5.46	4.75/4.30	4.50/4.00	4.25/3.69	4.00/3.38	3.75/3.04	3.50/2.79
7	6.00/5.75	5.88/5.60	5.75/5.44	5.62/5.27	5.50/5.12	5.38/4.96	5.25/4.80	5.00/4.50	4.75/4.19	4.50/3.88	4.25/3.54	4.00/3.29
7 1/2	6.50/6.25	6.38/6.10	6.25/5.94	6.12/5.77	6.00/5.62	5.88/5.46	5.75/5.30	5.50/5.00	5.25/4.69	5.00/4.38	4.75/4.04	4.50/3.79
8	7.00/6.75	6.88/6.60	6.75/6.44	6.62/6.27	6.50/6.12	6.38/5.96	6.25/5.80	6.00/5.50	5.75/5.19	5.50/4.88	5.25/4.54	5.00/4.29
8 1/2	7.50/7.25	7.38/7.10	7.25/6.94	7.12/6.77	7.00/6.62	6.88/6.46	6.75/6.30	6.50/6.00	6.25/5.69	6.00/5.38	5.75/5.04	5.50/4.79
9	8.00/7.75	7.88/7.60	7.75/7.44	7.62/7.27	7.50/7.12	7.38/6.96	7.25/7.05	7.00/6.50	6.75/6.19	6.50/5.88	6.25/5.54	6.00/5.29
9 1/2	8.50/8.25	8.38/8.10	8.25/7.94	8.12/7.77	8.00/7.62	7.88/7.46	7.75/7.30	7.50/7.00	7.25/6.69	7.00/6.38	6.75/6.04	6.50/5.79
10	9.00/8.75	8.88/8.60	8.75/8.44	8.62/8.27	8.50/8.12	8.38/7.96	8.25/7.80	8.00/7.50	7.75/7.19	7.50/6.88	7.25/6.54	7.00/6.29

This table represents the grip / body lengths of standard cap screws and is in accordance with ASME B18.2.1. It does not apply to Hex Bolts / Hex Machine Bolts. To calculate thread length, subtract the Max/Min Grip Lengths from the nominal cap screw length. This will give you the thread length. Please note the actual length of the cap screw will affect thread length calculations, but will not affect the grip / body length.

Length Tolerances for Cap Screws						
Nominal Length	Nominal Size					
	1/4 to 3/8	7/16 & 1/2	9/16 to 3/4	7/8 to 1	1 1/8 to 1 1/2	Over 1 1/2
Up to & incl 1"	-0.03	-0.03	-0.03			
Over 1" to 2 1/2", incl.	-0.04	-0.06	-0.08	-0.10	-0.12	-0.18
Over 2 1/2" to 4", incl.	-0.06	-0.08	-0.10	-0.14	-0.16	-0.20
Over 4" to 6", incl.	-0.10	-0.10	-0.10	-0.16	-0.18	-0.22
Over 6"	-0.18	-0.18	-0.18	-0.20	-0.22	-0.24

All cap screws have a minus tolerance only.

Wrench / Socket Sizes							
Bolt Size	Socket Size	Bolt Size	Socket Size	Bolt Size	Socket Size	Bolt Size	Socket Size
1/4	7/16	9/16	13/16	1 1/8	1 11/16	2	3
5/16	1/2	5/8	15/16	1 1/4	1 7/8	2 1/4	3 3/8
3/8	9/16	3/4	1 1/8	1 3/8	2 1/16	2 1/2	3 3/4
7/16	5/8	7/8	1 5/16	1 1/2	2 1/4	2 3/4	4 1/8
1/2	3/4	1	1 1/2	1 3/4	2 5/8	3	4 1/2